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# Unmanned Surface Vehicles: Reducing Risks for Joint Surface Force Protection Operations

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Newport, Rhode Island**

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Reprint of a presentation at the *Second Homeland Security  
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# Sensors & Sonar Systems DEPARTMENT

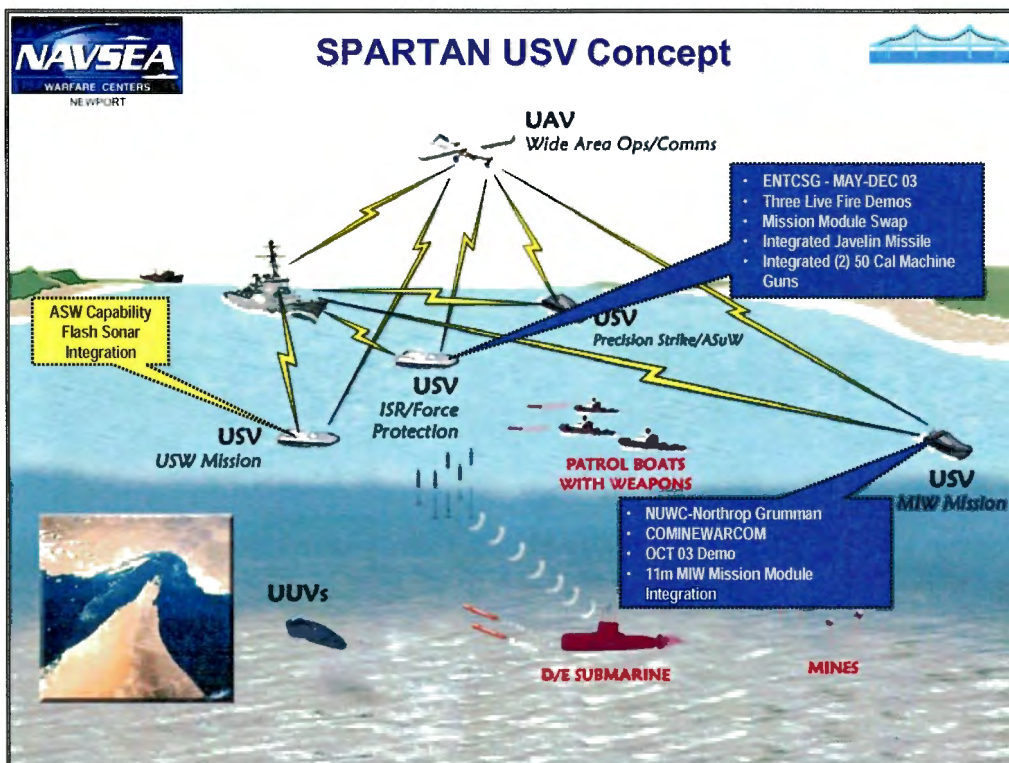
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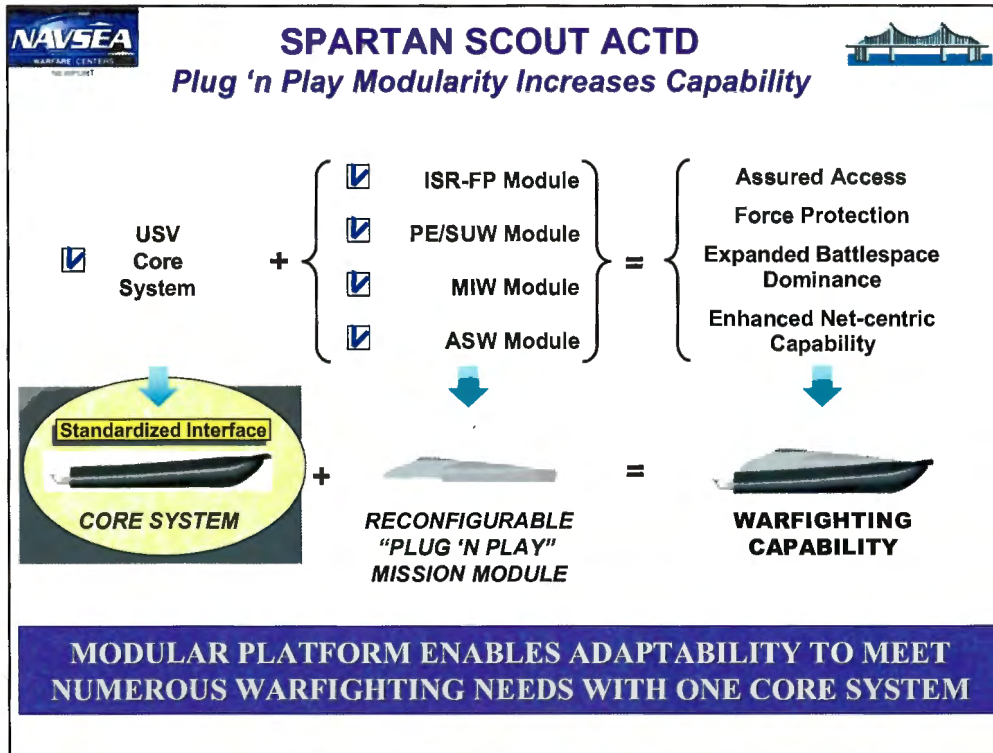
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**NAVSEA**  
NAVY AND AIR FORCE  
SEASIDE

## SPARTAN USV Accomplishments



- ❑ Initial Unmanned Surface Vehicle (USV) Concept – 2001
- ❑ Fleet Battle Experiment Participation - 2001
- ❑ Established Joint Service/Multi-National OSD ACTD – 2002
- ❑ USS Enterprise Carrier Strike Group Deployment - 2003
- ❑ Completed three USV Force Protection "Live Fire" Tests – 2004/05
- ❑ Selected as Littoral Combat Ship ASW Mission Package - 2004
- ❑ Demonstrated Mine Warfare Capability - 2005
- ❑ Demonstrated Multiple USV Command and Control – 2005
- ❑ Coordinated "Live Fire" demonstrations with USN Weapon System Explosive Safety Review Board (WSERB)
- ❑ Final Military Utility Assessment (MUA) for IRS/FP in early January 2006







## NUWC USV Utilization



- ❑ **Selected as Littoral Combat Ship ASW Mission Package - 2004**
- ❑ **Exercise Torpedo Launch – 2005**
- ❑ **Demonstrated ASW Dipping Sonar capability with sensors from multiple vendors – 2004/05**
- ❑ **Demonstrated Mine Warfare Capability - 2005**
- ❑ **Demonstrated Multiple USV Command and Control – 2005**
- ❑ **Part of Shipboard Protection System CONOPS**



Multi-Vehicle Command and Control



ASW Dipping Sonar (HELTRAS & FLASH)



MIW Towed Sonar (AQS-24 & Sweep)

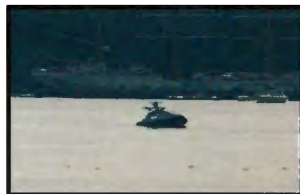


Weapon, Countermeasure and UUV Surrogate

## USV Home Land Security Applications



- ❑ **Recent Successful Demonstrations are the building blocks for**
  - Harbor Defense/Port Security
    - ISR/FP USV with Force Protection Demonstrations
      - Provides a means to show presence, deter, counter or engage asymmetric threats
      - Provides Electro-Optical and Infrared (EO/IR) capability for daylight, night and low visibility operations
      - Provides safe stand-off distance to perform surveillance, allows time to mobilize additional response(s) as necessary
    - Other applications are available such as Chemical, Biological and Radiological Detection
    - Potential for Integration with Automatic Identification System (AIS)
  - Escort Missions
    - Alleviates the need for manned Port Escort from USCG
      - U.S. Submarine Base Groton Demonstration
      - Provides visual presence at safe stand-off ranges



## USV HLS Applications (Continued)



- Maritime Interdiction/Drug Operations
  - EO/IR Surveillance
    - Enterprise CSG Deployment
  - Boarding Team distance support
  - Hailing capability/Verbal exchanges
    - ECSG and USCG demonstrations
- Multiple Vehicle Unmanned Demonstration
  - Demonstrated the first step in addressing small boat threats with multiple ISR and FP USVs
  - Provides a method to test multiple autonomous vehicles
  - Demonstrated control from secondary remote site



## Basic Equipment and Sensors



✓ **Equipment Arch**



✓ **Electronic Enclosures**



✓ **Operator Workstation**





## Summary



- ☐ **Modular interfaces for Mission Module developers with additional concepts**
- ☐ **Accomplishments of the SPARTAN ACTD and other USV development efforts have proven the technology**
- ☐ **USVs have demonstrated applicability for HLS applications**
  - ISR with EO/IR sensors with FP add deterrence and engagement capabilities
  - Harbor Defense/Port Security Protection
  - Escort Missions
  - Maritime Interdiction and Drug Operation support can be accomplished at safe stand-off ranges